REPORT

JOHN STROHM.

OF THE SURVEY OF A LINE OF

RAIL ROAD,

FROM THE

BOROUGH OF MARIETTA

TO INTERSECT THE

COLUMBIA & PHILADELPHIA RAIL ROAD,

NEAR THE

LITTLE CONESTOGO,

By SAMUEL H. KNEASS, Civil Engineer.

LANCASTER.

JOHN REYNOLDS, PRINTER.

1832.

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REPORT, &c.

MESSRS. HERTZLER, HOPKINS AND WILSON—

Gentlemen—I herewith submit my drawings of the survey and an estimate of the cost of the rail road, which your charter authorises, to connect the borough of Marietta on the Susquehanna river, with the line of State rail road, extending from the city of Philadelphia to the borough of Columbia, on the same river.

The stupendous plan of Internal Improvement contemplated by the Commonwealth, is founded on enlarged and general views of public welfare and wide spreading utility. It proposes intersecting the State in such manner that the universal interest shall be forwarded, without reference to any benefits accruing to particular districts, or the extension of superior favors to chosen sections. This universality of intention throws open peculiarly favorable avenues for isolated points, by which to connect their peculiar and private advancement with the public good. Many excellent opportunities are thus presented for connecting, by easy and rapid routes, places of previous deposit with the grand arteries of communication, provided by the government. The magnificent operations in which it is now successfully engaged, are rapidly removing those sectional jealousies, so conspicuous in the early stage of internal improvement, and instituting in their place a confidence in the patriotic views of the State, and a full faith in the axiom, that the nearer we are to a market, the greater the inducement to industry, and the higher advantages we enjoy as citizens. The line of State improvement, running within short distances of flourishing boroughs, or points of concentration for produce, repeatedly renders necessary, or expedient, the exertion of individual enterprise, in order to perfect the communication, in some instances unavoidably left incomplete, by a rigid adherence to universal or general benefit.

The improvement the company has in contemplation is fairly an object of private enterprise, from the favorable circumstances that attend it;—the line is short, can be accomplished at small expense, and will secure many advantages to citizens and traders not now enjoyed. The borough of Marietta affords greater facilities to the river trade, for landing, than any other point for many miles above or below; and it is, in consequence, a depot for a vast amount of trade, derived from the enterprising character of the population on the river, as we approach its diminishing branches, still commanding and affording facilities to the all-productive power of industry.

The valuable bituminous coal mines of Centre, Lycoming and Juniatta counties—the inexhaustible mines of Lykens Valley, with the iron, flour, pork, whiskey, lumber, &c. &c. &c. constantly flowing into the valley of the Susquehanna from adjacent counties, whose high reputation for agricultural and mineral productions stand at this moment unrivalled, and whose character is increasing in proportion to the facilities furnished by State liberality and private enterprise, seem to demand some ready and rapid mode of conveyance to a market, in order to bring them fairly into competition with the products of neighborhoods more immediately in the vicinity of the leading lines of State improvement.

By no plan can this be as readily accomplished as by the work now contemplated—a large proportion of these articles will seek a market by this route in preference to encountering the delays of the canal or the dangers of the Susquehanna.

Nor will the route be wanting in a trade peculiarly its own. The productions of the various mills and farms in the country through which it passes, must seek this channel, whether they be destined to Marietta or to some point on the great chain of internal communication by rail road.

I have ascertained by a close calculation, with the best data I could obtain from respectable inhabitants on different parts of the line, that an amount rising 80,000 tons of river trade, a trade entirely independent of the business of the canal, will be transported from the borough of Marietta, on the Susquehanna river, to the city of Philadelphia. This amount is less than one half of the trade that now concentrates at that point; the other half descends the river, different points on the route receiving small deposits, and the residue ultimately finding a market at the city of Baltimore.

The line of rail road then will certainly command a trade of 80,000 tons per annum, and with a fair prospect of whatever increase the favorable circumstances of the country may have in reversion. The length of the line can be reduced to 12 miles, securing as direct and short a route as the face of the country will allow. The distance from Marietta to Columbia and from Columbia to the point on the state rail road, from which your improvement will depart for Marietta is about thirteen miles; thus there will exist a saving in distance from the Susquehanna river to Philadelphia; there will be avoided the dangerous navigation of the river, and other difficulties which are connected with the State improvements in reference to the immediate trade between the two points to be united by the improvement you have in view. You have then a double advantage—first, the diminished cost of transportation which the route from Marietta direct to Philadelphia by rail road will present, and, second, the great saving in time, by avoiding the inclined plane on the State rail road at Columbia, where delay will be inevitable; so that, by the projected improvement, you will achieve the important considerations of economy of distance, time and expense, which sufficiently justify the undertaking; particularly so when properly conducted, as the premises will insure the enjoyment of at least 8 per cent. for the capital invested.

The cost of the rail road, as per the accompanying estimate, is nearly $130,000, for a single track, laid with sufficient permanency to admit of steam power being used upon it.

The following particulars of the trade which must pass on your rail road on its way to the Philadelphia market, have been obtained by my own particular enquiries, from authority upon which I could rely, and will exhibit the amount of revenue derivable from the prudent and judicious management of the affairs of the company.

One hundred and sixty thousand tons of various merchandize descended the river Susquehanna in the year 1831, one half of which passed down the river to a market below Marietta, leaving 80,000 tons to be disposed of at your borough. The tolls upon which, estimating one cent per ton per mile, and the length of your road, as estimated, 12 miles, which would be 12 cents upon each ton, or $9,600, the total receipts in tolls of the business of one year, descending to Philadelphia. To this amount may be safely added $1,000, receipts for tolls upon the return trade, which in the aggregate will give $10,600, the total receipts from tolls, on the present estimated amount of trade; being 6 per cent on the capital sum of nearly $177,000—or 8 per cent on the cost of your road, reserving a surplus contingent fund applicable to occasional repairs, &c.

The following general description of the lines that were traced will serve upon reference to the accompanying map to point out the line of survey:

Commencing in the borough of Marietta, at the point designated in your charter, the line passes through the alley which runs nearly parallel with, and between the main and the river street, and is continued along the gently sloping ground which lies between the Columbia road and the Marietta and Lancaster Turnpike to Chiquesalunga creek; crossing this stream between the Pennsylvania Canal and the mouth of Share's run, with an elevation of 18 feet above the water in Haldeman's dam, a trace was effected with an ascending grade of 30 feet per mile, along the northern side of Chesnut ridge, crossing the Marietta and Lancaster turnpike at the end of Chicquesalunga bridge, and opposite Johnson's Mill; thence along the pre-

cipitous bank of the creek for a short distance to gently sloping ground, terminating on the summit of the bank of Chicquesalunga creek, at I. Mouck's barn, with a cut of 8 feet in depth. From this point the line continues at grades varying between 30 feet per mile and a level, along the summit of the bank of the creek, passing on the right of Musser's house and on the left of Sherrick's barn, crosses the Lancaster and Marietta turnpike about one fourth of mile east of Sherrick's house, and is traced back of Hertzler's distillery; a few perches east of which it became necessary to recross the turnpike at the Maytown road, and proceed in a North Eastwardly direction, crossing Smith's lane, on the right of Smith's house, and Stœffer's lane, on the right of his house, and the road leading to the Mennonist meeting house on the turnpike and Schenk's mill at Gray's woods; thence crossing Gamber's mill road near Henry Stœffer's house, from which a more eastwardly course was pursued, crossing Muddy Creek on lands of Greider and Hershey to the southern bank of Hershey's run, along which the line was continued upon exceedingly favorable ground to the summit of the dividing ridge between the waters of Chicquesalunga and Little Conetoga creeks; piercing this ridge with 7 feet cutting, on land of C. Weldie, the line is made to extend to Kauffman's run, opposite Christian Kauffman's house—thence along its southern bank, crossing the Harrisburg and Lancaster turnpike, near the five mile stone, and re-crossing the turnpike to the northern side, near Shrader's tavern, a continuation of the line upon highly favorable ground was effected, to the termination of the survey on the Pennsylvania rail road, at a point between the town of Hempfield and Little Conestoga creek.

The whole length of the line of survey by this route exceeds 13 miles, upon which the grade does not exceed 30 feet per mile, and the least radius of curvature is 900 feet; presenting a line of rail road both in plan and profile upon which steam, as a motive power, can be advantageously and profitably used. It is proper here to mention that there are many points where the line can be shortened, without impairing the plan or the profile of the road, and it is confidently believed will have a tendency rather to lessen than increase the amount of work which has already been estimated.

It is probable that the amount of rock to be excavated will exceed that which appears in the estimate, and which could not be correctly ascertained from the uncertainty of its depth below the surface of the ground, a characteristic of the country over which the rail road must pass. If this should be the case it will prove advantageous to your company, by avoiding the additional labor and expense of transporting the stone from a distance, which must necessarily be used in the construction of your road, as the amount required for foundations of sills, bridges and culverts, considerably exceeds the estimated amount of rock excavation.

The route commencing at I. Mouck's and terminating at Marietta, pursues nearly the course of the line previously described to a point in Boyd's woods, from which a course was traced crossing Chicquesalunga creek, at the rocky bluff, a few perches above Haldeman's ford, thence through Guy's woods, passing about about 100 feet north of Guy's distillery, crossing Share's run, immediately after passing the road leading from the Marietta and Lancaster turnpike, at Johnson's mill, to the Columbia and Marietta road, at the mouth of Chiquesalunga creek; thence along the north side of the ridge, which lies between the Columbia road and Share's run, attaining its summit in Guy's woods, piercing this ridge with 20 feet cutting, the line terminates at the eastern end of the alley on the line previously described.

The line of rail road by this route will be about one quarter of a mile shorter than that first described, yet the difference in cost is in favor of the longer route, there are other facts connected with this route, which give a decided preference to the line first surveyed, in this one objection is found to a grade of nearly 50 feet per mile descending from the ridge in Guy's woods, west of Share's run; and there will also be required a curvature of between 6 and 700 feet radius, which of themselves would be sufficient reasons for abandoning the shorter in favor of the longer route, upon which a grade of 30 feet per mile, and a curvature of 900 feet radius could be obtained even if at an increased cost.

It may be urged that this grade of 50 feet per mile could be obviated by continuing the line through Main street; there would still however exist a greater difference in the cost of the two lines, and the objection of terminating the road at a depot on the level of main near its junction with Decatur street, would be, that the distance to the canal, from the rail road, would be too great to conduct the business of transhipment with as much facility as if the depot were made immediately on the berm bank of the canal, commencing at Decatur street and extending westwardly. It is proper, however, to mention, that if the Main street route be chosen, it will be necessary to commence the line about half a mile west of Decatur street, so as to be able to ascend to the level of Main street, which could be attained with a grade of about 30 feet per mile at the west end of Mr. Mehaffy's lot.

Upon the whole I am decidedly of the opinion, that a line commencing at Decatur street, and continuing through the alley as first described, will present the least difficulties in construction, and is in every respect better suited to the wants, wishes and conveniences, not only of the citizens generally, but of those engaged in sending and receiving the various articles that constitute the trade which may be anticipated upon the railway.

It now only remains to present you with the estimated cost of construction, which is as follws:—

SAM'L H. KNEASS, *Civil Engineer.*

Philadelphia, 1st Deeember, 1832.

SUPERSTRUCTURE.

Rails, 5 inches by 7; 30,800 feet bd. measure, at $15 per M.	$462 00
Sleepers, 1320, 6 and 10 in. 7 feet 8 in. in length, at 25 cents each,	330 00
Iron plates. 2 in. 5-8=19 tons, 1 cwt. 3 qrs. 12 lbs. at 2¾ cts. pr. lb.	1,176 12
Iron spikes, 1 foot 6 inches apart, 8 to the lb. 495 lbs. at 8 cents,	39 60
Wooden wedges, 2567 feet at $18 per M.	46 21
Broken stone, 1279 perches at $1 00 per perch,	1,279 00
Preparing sleepers for the reception of rails, laying down and spiking on Iron plate,	171 50
Total cost of one mile,	$3,504 43

Section No. 1.—2640 *feet in length.—Eastern Route.*

Superstructure as estimated above,	$1,752 22
Embankment 810 cubic yards at 15 cents,	121 50
Excavation, 171 " at 10 cents,	17 10
	$1,890 82

Section No. 2.

Superstructure,	$1,752 22
Embankment, 2693 at 15	403 95
Excavation 56 at 12½	7 00
Culvert, 36 perches at $2 50	90 00
	2,253 17
Total,	$4,143 99

Section No. 3.

Superstructure,	$1,752 22
Embankment, 807 cubic yards, at 15 cents,	121 05
Excavation, 982 " at 12½	122 75
	1,996 02
Total,	$6,140 01

Section No. 4.

Superstructure,	$1,752 22
Embankment,	
Excavation, 2450 yards, at 12½	306 25
	$2,058 47
Total,	$8,198 48

Brought forward,	$8,198 48
Section No. 5.	
Superstructure,	$1,752 22
Embankment, 364 cubic yards, at 12½	45 50
Excavation, 186 " at 15	27 90
Bridge, Stone work, 1422 perches, at $2 50	3,555 00
Bridge, Wood " 500 feet, at 3 50	1,750 00
Bridge, Embankment, 2723 yards at 15 c.	408 45
	$7,539 07
Total,	$15,737 55
Section No. 6.	
Superstructure,	$1,752 22
Embankment and excavation 6650 yards, at 12½	831 25
Rock excavation, 1133 yards at 50	560 50
	3,143 97
Total,	$18,881 52
Section No. 7.	
Superstructure,	$1,752 22
Excavation, 9951 yards at 12½	1,243 88
Embankment, 5064 y'ds at 15	759 60
Rock Excavation, 625 yards at 50	312 50
Culvert, 4 feet span, 88 perches at $2 50	220 00
" " 139 "	347 50
Bridge Stone work 146 "	365 00
Bridge Wood work, 36 feet at $2 00	72 00
	$5,072 70
Total,	$23,954 22
Section No. 8.	
Superstructure,	$1,752 22
Excavation, 5570 cubic yards at 12½	694 25
Embankment 1203 " at 15	180 45
Rock excavation 1452 " at 50	726 00
Culvert, 4 feet span, 68 perches, at $2 50	170 00
	3,522 92
Total,	$27,477 14
Section No. 9.	
Superstructure,	$1,752 22
Embankment, 9648 yards, at 15	1.447 20
Excavation, 6300 " at 12½	787 50
Culvert, 4 feet span, 97 perches at $2 50	242 50
" 46 " "	115 00
Bridge Stone work, 300 " "	750 00
Bridge Wood " 36 2 00	72 00
	5,166 42
Total,	$32,643 56
Section No. 10.	
Superstructure,	$1,752 22
Embankment, 9203 yards at 15 cents,	1,380 45
Excavation, 19115 " at 12½	2,389 38
Culvert, 4 feet span, 132 perches, at $2 50	330 00
Bridge Stone work, 706 "	1,765 00
Bridge Wood work, 74 feet, at $2 00	148 00
	7,765 05
Total,	$40,408 61

Brought forward,	$40,408 61
Section No. 11	
Superstructure,	$1,752 22
Embankment, 2417 at 15	362 55
" 15793 at 25	3,948 25
Excavation, 2417 at 12½	302 13
Culvert, 116 perches at 2 50	290 00
	6,655 15
Total,	$47,063 76
Section No. 12.	
Superstructure.	1,752 22
Excavation, 2864 yards at 12½	358 00
Embankment, 5882 " at 15,	882 30
Rock excavtion, 892 at 50,	446 00
Culvert, 110 perches, at 2 50,	275 00
	3,713 52
Total,	$50,777 28
Section No. 13.	
Superstructure,	$1,752 22
Excavation, 5482 yards, at 12½,	685 25
Embankment, 9474 " at 15,	1,421 10
Rock excavation, 11,884 yards, at 50,	5,942 00
Bridge { Stone work, 152 perches, at 2 50,	380 00
Bridge { Wood work, 36 feet at 2 00,	72 00
Culvert 76 feet, at 2 50,	230 00
	10,482 57
Total,	$61,259 85
Section No. 14.	
Superstructure,	$1,752 22
Excavation, 10,251 yards at 12½,	1281 38
Embankment, 5464 " at 15,	819 60
Culvert, 4 feet, span, 43 perches, at 2 50,	107 50
" " 64 " "	160 00
	4,120 70
Total,	$65,380 55
Section No. 15.	
Superstructure,	$1,752 22
Excavation., 35,290 yards, at 15,	5,293 50
Embankment, 4,240 yards, at 12,½	530 00
Bridge { Stone work 130 perches at 2 50,	325 00
Bridge { Wood work, 36 feet, 2 00,	72 00
	7,972 27
Total,	$73,353 27
Section No. 16.	
Superstructure,	$1,752 22
Excavation, 5062 at 12½	632 75
Embankment, 1684 at 15,	252 60
Truss work, 1485 feet 3 50,	5,197 50
Stone work 115 perches, at 2 50,	287 50
750 " at 1 00	750 00
	8,872 57
Total,	$82,225 84

Brought forward,	$82,225 84
Section No. 17.	
Superstructure,	$1,752 22
Excavation, 4264 yards at 12½	533 00
Embakment, 896 " at 15,	134 40
	2,419 62
Total,	$84,645 46
Section No. 18.	
Superstructure,	$1,752 22
Embankment, 869 cubic yards, at 15,	130 35
Excavation, 3684 " at 12½,	460 50
	2,343 07
Total,	$86,988 53
Section No. 19.	
Superstructure,	$1,752 22
Excavation, 3264 yards at 12½	408 00
Embankments, 1874 " at 15,	281 10
Bridge { Stone work 146 perches, at 2 50,	365 00
Bridge { Wood, " 36 feet, at 2 00,	72 00
	2,878 32
Total,	$89,866 85
Section No. 20.	
Superstructure,	$1,752 22
Excavation, 1841 yards at 12½,	230 13
Embankment, 12,233 " at 25,	3058 25
Embankment, 1,250 " at 15,	187 50
Culvert, 4 feet 122 perches at 2 50,	305 00
	5,533 10
Total,	$95,399 95
Section No. 21.	
Superstructure,	$1,752 22
Excavation, 6589 yards at 12½,	823 63
Embankment, 3341 " at 15,	501 15
	3,077 00
Total,	$98,476 95
Section No. 22.	
Superstructure,	$1,752 22
Excavation, 1644 yards at 12½,	205 50
Embankment, 3462 " at 15,	519 30
	2,477 02
Total,	$100,953 97
Section No. 23.	
Superstructure,	$1,752 22
Excavation, 1162 yards at 12½,	145 25
Embankment, 1891 " at 15	283 65
Bridge { Stone work, 154 perches, at 2 50,	385 00
Bridge { Wood " 36 feet, at 2 00,	72 00
	2,638 12
Total,	103,592 09

Brought forward,	$103,592 09
Section No. 24.	
Superstructure,	$1,752 22
Excavation, 1643 yards, at 12½	205 38
Embankment, 2575 " at 15	387 25
Culvert, 72 perches at $2 50	180 00
	2,524 85
Total,	$106,116 94
Section No. 25.	
Superstructure,	1,752 22
Excavation, 1351 at 12½	191 38
Embankment, 3284 at 15	492 60
	2,436 20
Total,	$108,553 14
Section No. 26.	
Superstructure,	$1,752 22
Excavation, 7450 yards at 12½	931 25
Embankment, 14688 at 15	3,672 00
Rock excavation, 845 at 53	422 50
Culvert, 112 perches at 2 50	280 00
	7,057 97
Total,	$115,611 11
Section No. 27—1900 feet.	
Superstructure,	$1,752 22
Excavation, 4226 yards at 12½	528 25
	2,280 47
Total,	$117,891 58

Total distance thirteen miles and one thousand nine hundred feet—Estimated expense, $117,891 58—Rate per mile, $8,824 32—Add 10 per cent to estimate for contingencies, making the whole cost on this route $129,680 74.

WESTERN ROUTE.

Total cost of three sections before the line changes,	$6,140 01
Section No. 4.	
Superstructure,	$1,752 22
Excavation, 10,034 yards at 12½	1,254 25
Embankment, 150 at 15	225 00
Culvert, 42 perches, at 2 50	105 00
	3,336 47
Total,	$9,476 48
Section No. 5.	
Superstructure,	$1,752 22
Excavation, 7400 yards, at 12½,	925 00
Embankment, 37,186 at 15,	5,577 90
Bridge { Stone work, 128 perches, at 2 50,	320 00
Bridge { Wood " 36 feet at 2 00,	72 00
Culvert, 6 feet span, 472 perches, 2 50	1180 00
	9,827 12
Total,	$19,303 60

Brought forward,	$19,303 60
Section No. 6.	
Superstructure,	$1,752 22
Excavation, 10,327 yards, at 12½,	1,290 88
Embankment, 20,542 " at 15,	3,081 30
Rock excavation, 854 " 50	427 00
Bridge } Stone work, 864 perches, at 2 50,	2,160 00
Bridge } Wood " 76 feet at 2 00,	152 00
Culvert, 4 feet span, 128 perches, at, 2 50,	320 00
	9,183 40
Total,	$28,487 00
Section No. 7.	
Superstructure,	$1,752 22
Excavation, 5810 yards, at 12½,	726 25
Embankment, 8600 yards, at 15,	1,290 00
Rock excavation, 452 yards at 50,	226 00
Bridge } Stone work, 121 perches at 2 50,	302 50
Bridge } Wood work, 36 feet at 2 00,	72 00
	4,368 97
Total,	$32,855 97
Section No. 8.	
Superstructure,	963 72
Excavation 3564 yards, at 12½,	445 50
Embankment 3128, " at 15,	469 20
Culvert, 94 perches. at 2 50,	235 00
	2,113 42
	$34,969 39
At this point No. 188, the levels join the old line:	
Total cost of 8 sections as above,	$34,969 39
Section 8 to 27 inclusive,	90,414 44
Total cost Western route,	$125,383 83
" Eastern "	117,891 58
Difference in favor of Eastern,	$7,492 25

Distance, 13 miles, 712 feet—Cost per mile, $9,556 80—Add 10 per cent to estimate for contingencies, making the whole cost on this route, $137,922 21.